

REMARKS

Claims 14 is objected to for an informality.

Claims 14 and 18 stand rejected under 35 USC 112, first paragraph.

Claims 8, 9, and 14 stand rejected under 35 USC 102 as being anticipated by Konishi (US 6152697).

Claims 10-13, 16, and 17 stand rejected under 35 USC 103 as being unpatentable over Konishi (US 6152697).

*Claim Amendments*

Applicant has amended claim 8 to now claim: "...wherein when disposed in a steam turbine the first outer region abuts the first end face of the middle region *upstream of a last row of blades within a high pressure part of the steam turbine.*" This is supported at least by element 6 of the figures, and paragraph 27 of the originally filed substitute specification, which states "After flowing through the *high-pressure part 6*, the steam flows..." Specifically, in figure 2 the high pressure region 6 spans the weld 25 (paragraph 34) where the first and middle regions abut, well upstream of the downstream end of the high pressure region. This would place the weld 25 well upstream of at least the last row of high pressure part blades. Further, in claim 15 Applicant claimed "a plurality of *blades attached to the first outer* and second outer regions of the turbine shaft." This also makes it clear that the weld 25 is necessarily upstream of at least the last row of blades in the high pressure region.

Applicant has amended claim 12 as supported by paragraph 18 of the originally filed substitute specification.

*Applicant's Response to 35 USC 112 Rejections*

Examiner states that the claim 14 limitation "producing a middle region from a middle bloc of a heat-resistant material" is not found anywhere in the specification. Applicant notes that paragraph 36 of the originally filed specification states:

[00036] The turbine shaft 3 is produced as described below. The *middle region 20 is produced from a heat-resistant material.* One outer region 21 is produced from a less heat-resistant material than that of the middle region 20. The second outer region 22 is likewise produced from a

less heat-resistant material than that of the middle region 20. The middle region 20 is subsequently welded to the two outer regions 21, 22.

Paragraphs 14, 31, and 32 disclose a highly heat resistant material as well. Applicant respectfully requests the 35 USC 112, first paragraph rejection of claim 14 be withdrawn.

Examiner states that the claim 18 limitation “wherein the middle region material is a forging steel having 9 to 12% by weight of chromium and the first and second materials are steels having 3.5% by weight of nickel” is a combination not found in anywhere in the specification. Applicant notes that paragraph 32 of the originally filed specification states: “The two outer regions 21 and 22 may be produced from steels having 1 to 2% by weight of chromium, or essentially 3.5% by weight of nickel.” Applicant has amended paragraph 32 to include language specific to the claim 18 combination, in case the above is not sufficient. Applicant respectfully requests the 35 USC 112, first paragraph rejection of claim 18 be withdrawn.

#### *Applicant's Response to 35 USC 102 Rejections*

Konishi teaches a “different material welded rotor” made of four blocs (figure 1) or alternately, three blocs (figure 5). In all embodiments, weld A, which connects the first outer bloc to the middle bloc, is disposed outside of the high pressure region. In other words, weld A is not in the steam flow path at all. In contrast, in claim 8 Applicant claims “wherein when disposed in a steam turbine the first outer region abuts the first end face of the middle region *upstream of a last row of blades within a high pressure part of the steam turbine.*” Similarly, in claim 14 Applicant claims the first outer region being “configured to, when disposed in a steam turbine, *abut the middle region upstream of a last row of blades within a high pressure part of the steam turbine.*” Thus, Konishi does not teach or suggest Applicant's claim 8 or claim 14 language. Applicant respectfully requests the 35 USC 102 rejection of claims 8 and 14, and dependent claim 9, be withdrawn.

#### *Applicant's Response to 35 USC 103 Rejections*

The rejection of claims 10-13, 16, and 17 relies on the underlying 102 Konishi rejection of claim 8. Amended claim 8 survives application of Konishi, and thus claims 10-13, 16, and 17 also survive, because the 103 Konishi rejection does not teach or suggest the limitations not

taught by the 102 Konishi rejection. Applicant respectfully requests the 35 USC 103 rejection of claims 10-13, 16, and 17 be withdrawn.

Examiner further asserts that the elements of claims 10-13, 16, and 17 are obvious design choices because it appears that the Konishi apparatus would perform equally well with the alloys and working conditions as claimed by Applicants. Konishi discloses 12Cr steel for the middle region, 2.25CrMoV for the first outer region, and 3.5NiCrMoV for the second outer region. There is no teaching or suggestion in Konishi to alter these compositions; Examiner does so to reduce the chromium or nickel. Applicant can find no teaching in Konishi for a middle region to be of nickel, and thus Applicant asserts that claims 13, 16, and 17, which have nickel based middle regions, cannot be reached using Konishi because Konishi teaches a 12Cr middle region. Applicant respectfully requests the 35 USC 103 rejection of claims 13, 16, and 17 be withdrawn.

In claim 15 Applicant claims “a plurality of *blades attached to the first outer* and second outer *regions* of the turbine shaft.” Thus, the first outer region comprises blades, which means that similar to claim 8, a portion of the first outer region is disposed in the high pressure region of the turbine when assembled. In contrast, even if Shiga is modified with the teaching of Konishi, as asserted above, Konishi does not teach any portion of the first outer region being disposed in the high pressure area. While there is a portion of the second outer region in the medium pressure region, the temperatures in the medium pressure region are significantly below those in the high pressure region, and as a result, the first outer region of Konishi is relegated to a position outside of the high pressure region. Modifying Konishi to relocate the weld would require that the Konishi first region material be able to withstand temperatures at some point in the high pressure region, and that is not taught or suggested. Applicant respectfully requests the 35 USC 103 rejection of claim 15 be withdrawn.

(Continued on the next page.)

Conclusion

The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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